

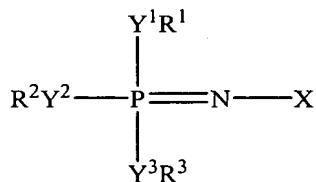
Amendments to the Specification

Please replace the paragraph beginning on page 5, line 9, with the following rewritten paragraph:

The first aspect of the non-aqueous electrolyte cell of the invention that attains the first object as above comprises a non-aqueous electrolyte that contains lithium ions and more than 2.5 % by volume of a ~~phosphagen~~-phosphazene derivative having a flash point of not lower than 100°C, and a positive electrode, and a negative electrode capable of absorbing and releasing lithium;

wherein the ~~phosphagen~~-phosphazene derivative is represented by any of the following general formula (1) or (2):

Formula (1)



wherein R^1 , R^2 and R^3 each represents a monovalent substituent or a halogen element; X represents an organic group containing at least one element selected from carbon, silicon, germanium, tin, nitrogen, phosphorus, arsenic, antimony, bismuth, oxygen, sulfur, selenium, tellurium and polonium; and Y^1 , Y^2 and Y^3 each represent a divalent linking group, a divalent element or a single bond,

Formula (2)



wherein R^4 represents a monovalent substituent, or a halogen element; and n falls between 3 and 15.

Please replace the paragraph beginning on page 5/1, line 9, with the following rewritten paragraph:

The second aspect of the non-aqueous electrolyte secondary cell of the invention that attains the second object as above comprises a non-aqueous electrolyte that contains a supporting salt, an organic solvent and a ~~phosphagen~~-phosphazene derivative, and a positive electrode, and a negative electrode; in which the potential window of the ~~phosphagen~~ phosphazene derivative is such that its lowermost limit is +0.5 V or lower and its uppermost limit is +4.5 V or higher, and the potential window of the organic solvent is broader than that of the ~~phosphagen~~-phosphazene derivative.

Please replace the paragraph beginning on page 5/1, last line, with the following rewritten paragraph:

The third aspect of the non-aqueous electrolyte secondary cell of the invention that attains the third object as above comprises a non-aqueous electrolyte that contains a supporting salt and a ~~phosphagen~~-phosphazene derivative of which the electroconductivity in a lithium salt solution (0.5 mols/liter) is at least 2.0 mS/cm, and a positive electrode, and a negative electrode.

Please replace the paragraph beginning on page 6, line 7, with the following rewritten paragraph:

The fourth aspect of the non-aqueous electrolyte secondary cell of the invention that attains the fourth object as above comprises a non-aqueous electrolyte that contains a supporting salt and a ~~phosphagen~~-phosphazene derivative of which the dielectric constant at 25°C is at least 15 and the viscosity is at most 20 mPa·s (20 cP), and a positive electrode, and a negative electrode.

Please replace the paragraph beginning on page 7, penultimate line, with the following rewritten paragraph:

The non-aqueous electrolyte contains at least a supporting salt, a ~~phosphagen~~ phosphazene derivative, and an organic solvent.

Please replace the paragraph beginning on page 8, line 21, with the following rewritten paragraph:

~~-Phosphagen~~ Phosphazene Derivative-

Please replace the paragraph beginning on page 8, line 22, with the following rewritten paragraph:

The reason the non-aqueous electrolyte of the first aspect of the invention contains a ~~phosphagen~~ phosphazene derivative is given below:

Please replace the paragraph beginning on page 9, line 1, with the following rewritten paragraph:

As mentioned hereinabove, in the conventional non-aqueous electrolytes in which the base is an aprotic organic solvent, the negative electrode material (containing lithium) has a low melting point (that is, the melting point of lithium metal is about 170°C). Therefore, when there is a sudden flow of a large amount of current through the cell as occurs when there is a short circuit, and when the cell is over-heated in that condition, the non-aqueous electrolyte therein vaporizes and decomposes to give gas. If so, the cell explodes or catches fire because of the gas generated therein, the fire often spreads all over the surface of the electrolyte in the cell, and the cell is therefore dangerous. For example, when a UM-3 size cylindrical cell that comprises a positive electrode of an inorganic compound, a negative electrode of lithium metal, and an electrolyte of a lithium salt dissolved in an organic solvent such as an aprotic organic solvent is fabricated, and when the two electrodes of this cell are externally short-circuited, the cell heats up to 150°C or higher. In that condition, the cell

often explodes and catches fire, and the fire spreads all over the surface of the electrolyte therein. However, when the non-aqueous electrolyte in the cell contains a ~~phosphagen~~ phosphazene derivative, the non-aqueous electrolyte is prevented from vaporizing and decomposing to give gas at relatively low temperatures, and therefore the cell is prevented from exploding and catching fire because of the absence of gas therein. As a result, the cell is free of the danger of fire spreading over the surface of the electrolyte therein. Even though the electrolyte in the cell contains an aprotic organic solvent, the ~~phosphagen~~ phosphazene derivative existing therein along with the solvent prevents the solvent from igniting, and, as a result, the cell is thereby prevented from exploding, igniting and catching fire.

Please replace the paragraph beginning on page 10, line 8, with the following rewritten paragraph:

Heretofore, completely solid cells are known, which comprise a ~~polyphosphagen~~ polyphosphazene (solid ~~phosphagen-phosphazene~~ such as ~~methoxyethoxy polyphosphagen~~, ~~oligoethyleneoxy polyphosphagen~~ methoxyethoxy-polyphosphazene, oligoethyleneoxy-polyphosphazene) as the solid electrolyte therein. They are expected to have good flame retardation, but when compared with ordinary cells comprising a liquid electrolyte, their ionic conductivity is extremely low, falling between 1/10000 and 1/1000 of that of liquid electrolyte cells. Therefore, their applications are limited only to low-discharge current cells, and they can not attain good cycle characteristics. Unlike the solid ~~phosphagens~~ phosphazenes in the solid cells, the ~~phosphagen~~ phosphazene derivatives to be used in the electrolyte in the cell of the present invention are liquid at room temperature, and therefore, the cell containing such a liquid ~~phosphagen~~ phosphazene derivative in its liquid electrolyte ensures good electroconductivity and cycle characteristics that are comparable to those of ordinary cells containing an ordinary liquid electrolyte.

Please replace the paragraph beginning on page 11, line 1, with the following rewritten paragraph:

The reason why the non-aqueous electrolyte to be used in the cell of the second to fourth aspects of the invention also contains a ~~phosphagen~~-phosphazene derivative is given below.

Please replace the paragraph beginning on page 11, line 4, with the following rewritten paragraph:

As described hereinabove, when a large amount of the current suddenly flows through a conventional non-aqueous electrolyte secondary cell as occurs when there is short-circuit, and when the cell is overheats in that condition, the non-aqueous electrolyte therein vaporizes and decomposes to give gas, and the cell explodes or catches fire because of the gas generated therein, and is therefore dangerous in that condition. However, if a ~~phosphagen~~-phosphazene derivative is added to the non-aqueous electrolyte in the cell, it gives nitrogen gas and therefore exhibits good self-extinguishability or flame retardancy owing to the action of the nitrogen gas, and, as a result, the risk of cell explosion or ignition is thereby retarded.

Please replace the paragraph beginning on page 11, line 17, with the following rewritten paragraph:

In the first aspect of the invention, the flash point of the ~~phosphagen~~-phosphazene derivative must not be lower than 100°C, preferably not lower than 150°C, more preferably not lower than 180°C.

Please replace the paragraph beginning on page 11, line 21, with the following rewritten paragraph:

The ~~phosphagen~~-phosphazene derivative having an ignition temperature not lower than 100°C is effective for preventing the cell from catching fire, and, even if the cell catches

fire, the ~~phosphagen-phosphazene~~ derivative therein acts to prevent the fire from spreading over the electrolyte in the cell and therefore reduces the risk of cell damage.

Please replace the paragraph beginning on page 12, line 2, with the following rewritten paragraph:

Specifically, the flash point refers to the temperature at which the substance ignites and the fire covers at least 75 % of the surface of the ignited substance. The flash point is a criterion for determining the tendency of a substance to form a combustible mixture with air. In the invention, the flash point of the ~~phosphagen-phosphazene~~ derivative to be used is measured according to a mini-flash method of using a closed cup in the manner as follows: An automatic ignition tester (Grabner Instruments' Miniflash) is provided, which comprises a small chamber of 4 ml in size, a heating cup, a frame, an ignition unit and an automatic flame sensor system. One ml of the sample to be tested is put into the heating cup, which is then covered. In that condition, the heating cup is heated at the top of its cover. With that, the sample is heated to certain temperature intervals so that the mixture of the vapor and air in the cup is ignited at predetermined temperatures, and fire in the cup is detected. The temperature at which the mixture in the cup has started to ignite is read, and this is the flash point of the sample.

Please replace the paragraph beginning on page 12, line 21, with the following rewritten paragraph:

In the cell of the second to fourth aspects of the invention, the flash point of the ~~phosphagen-phosphazene~~ derivative used is preferably not lower than 100°C, and more preferably not lower than 150°C in order to prevent the cell from catching fire.

Please replace the paragraph beginning on page 13, line 2, with the following rewritten paragraph:

In the cell of the second aspect of the invention, the potential window of the ~~phosphagen-phosphazene~~ derivative used must fall within a predetermined range which must be wider than the potential window of the organic solvent therein. The potential window for the non-aqueous electrolyte secondary cell of the invention ~~refer~~refers to the voltage range in which the cell undergoes no electrochemical reaction. The ratio of Li/Li^+ is used for the reference electrode here.

Please replace the paragraph beginning on page 13, line 10, with the following rewritten paragraph:

The lowermost limit of the potential window of the ~~phosphagen-phosphazene~~ derivative in the non-aqueous electrolyte in the cell is at most +0.5 V and its uppermost limit is at least +4.5 V. Preferably, the lowermost limit is at most 0 V and the uppermost limit is at least +5 V.

Please replace the paragraph beginning on page 13, line 15, with the following rewritten paragraph:

If the lowermost limit of the potential window of the ~~phosphagen-phosphazene~~ derivative is larger than +0.5 V, or if the uppermost limit thereof is smaller than +4.5 V, the potential window of the ~~phosphagen-phosphazene~~ derivative used is too narrow and is therefore unfavorable since the non-aqueous electrolyte in the cell electrolyzes by itself in the charge-discharge cycle of the cell to shorten the life of the cell, or the cell will explode because of the gas generated therein, and is therefore dangerous. Conversely, when both the lowermost limit and the uppermost limit of the potential fall within the ranges defined as above, the non-aqueous electrode in the cell is always stable at the potential applied to the cell

in the charge-discharge cycle thereof, and therefore the cell is stable for a long period of time, and thus has a long life, and it is free from the risk of explosion.

Please replace the paragraph beginning on page 14, line 13, with the following rewritten paragraph:

More preferably, the lowermost limit of the potential window of the ~~phosphagen~~ phosphazene derivative falls between -0.5 and 0 V, and the uppermost limit thereof falls between +5 V and +8.5 V. In the invention, the potential window may have any combination of the uppermost limit and the lowermost limit falling within the defined ranges as above.

Please replace the paragraph beginning on page 14, line 19, with the following rewritten paragraph:

In case where the ~~phosphagen-phosphazene~~ derivative used herein has a halogen-containing substituent in its molecular structure, the lowermost limit and the uppermost limit of the potential window may shift in the positive direction to some degree, without any problems with respect to the potential of the ~~phosphagen-phosphazene~~ derivative.

Please replace the paragraph beginning on page 15, line 1, with the following rewritten paragraph:

In the cell of the third aspect of the invention, the electroconductivity of the ~~phosphagen-phosphazene~~ derivative in a lithium salt solution (concentration: 0.5 mols/liter) must be at least 2.0 mS/cm, and preferably falls between 4.0 and 15 mS/cm.

Please replace the paragraph beginning on page 15, line 5, with the following rewritten paragraph:

Electroconductivity of the ~~phosphagen-phosphazene~~ derivative in the cell lower than 2.0 mS/cm is unfavorable since electroconductivity necessary for the cell is not attained. The internal resistance of the cell will therefore increase and, as a result, the potential depression or elevation in the charge-discharge cycle of the cell will be great. Conversely, when the

electroconductivity of the ~~phosphagen-phosphazene~~ derivative is not lower than 2.0 mS/cm, the non-aqueous electrolyte in the cell has sufficient electroconductivity to prevent the internal resistance of the cell from increasing, and therefore the potential depression or elevation in the charge-discharge cycle of the cell can be suppressed.

Please replace the paragraph beginning on page 16, line 18, with the following rewritten paragraph:

In the cell of the fourth aspect of the invention, the dielectric constant of the ~~phosphagen-phosphazene~~ derivative at 25°C must be at least 15, and preferably falls between 15 and 90, and more preferably between 30 and 90.

Please replace the paragraph beginning on page 16, line 22, with the following rewritten paragraph:

If the dielectric constant of the ~~phosphagen-phosphazene~~ derivative in the cell is smaller than 15, the lithium salt, a source of lithium ions in the cell is difficult to dissociate and the number of free ions in the non-aqueous electrolyte in the cell will decrease, and, as a result, the electrolyte will not have sufficient electroconductivity and the cell capacity of non-aqueous secondary cell will be lowered.

Please replace the paragraph beginning on page 17, line 16, with the following rewritten paragraph:

In the cell of the first aspect of the invention, the ~~phosphagen-phosphazene~~ derivative content of the non-aqueous electrolyte is preferably larger than 2.5 % by volume, and more preferably falls between 25 and 90 % by volume, and even more preferably between 50 and 75 % by volume.

Please replace the paragraph beginning on page 17, line 21, with the following rewritten paragraph:

If the content is smaller than 25 % by volume, the cell can not be prevented from exploding and catching fire; but if larger than 90 %, it is as if the ~~phosphagen~~phosphazene derivative was being used alone in the electrolyte so the viscosity of the electrolyte increases and, as a result, the desired lithium ion conductivity is difficult to attain. Also, in this case, when the cell operates at low temperatures of the freezing point or lower, its capabilities will be insufficient.

Please replace the paragraph beginning on page 18, line 4, with the following rewritten paragraph:

In the cell of the second and third ~~aspect~~aspects of the invention, the ~~phosphagen~~phosphazene derivative content of the non-aqueous electrolyte is preferably at least 20 % by volume for satisfactory expression of self-extinguishability of the cell, and more preferably at least 30 % by volume for satisfactory expression of flame retardancy thereof. The uppermost limit of the ~~phosphagen~~phosphazene derivative content is not particularly limited, and may be up to 100 % by volume.

Please replace the paragraph beginning on page 18, line 12, with the following rewritten paragraph:

If the ~~phosphagen~~phosphazene derivative content thereof is smaller than 20 % by volume, the non-aqueous electrolyte will not have sufficient self-extinguishability; and if less than 30 % by volume, flame retardation will not be sufficient. The most preferred range of the ~~phosphagen~~phosphazene derivative content varies, depending on the type of the compound, but in general, an increase in the content will enhance the flame retardancy of the electrolyte.

Please replace the paragraph beginning on page 19, line 16, with the following rewritten paragraph:

In the cell of the fourth aspect of the invention, the ~~phosphagen-phosphazene~~ derivative content of the non-aqueous electrolyte may be 100 % by weight.

Please replace the paragraph beginning on page 19, line 19, with the following rewritten paragraph:

In general, solvents having a high dielectric constant are highly viscous. Therefore, when such a solvent having a high dielectric constant is used in a non-aqueous electrolyte, a predetermined amount of a low-viscosity co-solvent must be added thereto to thereby lower the viscosity of the electrolyte. In the fourth aspect of the invention, however, the ~~phosphagen-phosphazene~~ derivative used has a high dielectric constant but its viscosity is low, and therefore, this does not require any other co-solvent for viscosity reduction. Accordingly, in the fourth aspect of the invention, the non-aqueous electrolyte is easy to prepare, and there is no need to carry out phase separation. Therefore, in this aspect by using the non-aqueous electrolyte of this type, it is possible to fabricate non-aqueous electrolyte secondary cells which are stable for a long period of time.

Please replace the paragraph beginning on page 21, line 1, with the following rewritten paragraph:

In the cell of the second and third aspects of the invention, the viscosity at 25°C of the ~~phosphagen-phosphazene~~ derivative is preferably not higher than 100 mPa·s (100 cP), and more preferably not higher than 20 mPa·s (20 cP) in order for the non-aqueous electrolyte containing the compound to have low viscosity.

Please replace the paragraph beginning on page 21, line 7, with the following rewritten paragraph:

In the cell of the fourth aspect of the invention, the viscosity at 25°C of the ~~phosphagen-phosphazene~~ derivative is not higher than 20 mPa·s (20 cP), and preferably not higher than 10 mPa·s (10 cP). If the ~~phosphagen-phosphazene~~ derivative has a viscosity that falls within the range defined above, it will not require any additional low-viscosity co-solvent in the non-aqueous electrolyte containing it in order to make the electrolyte sufficiently conductive. Therefore, in this aspect, by using the ~~phosphagen-phosphazene~~ derivative of this type, it becomes easy to fabricate non-aqueous electrolyte secondary cells which are stable for a long period of time.

Please replace the paragraph beginning on page 21, line 19, with the following rewritten paragraph:

In the cell of the first to fourth aspects of the invention, the ~~phosphagen-phosphazene~~ derivative to be used is not particularly limited in view of the molecular structure thereof so long as it is liquid at room temperature (25°C). For use in the cell of the invention, a ~~phosphagen-phosphazene~~ derivative of any type can be suitably selected depending on the electroconductivity of the non-aqueous electrolyte containing it and on the object of the invention.

Please replace the paragraph beginning on page 22, line 2, with the following rewritten paragraph:

In the cell of the first to fourth aspects of the invention, the ~~phosphagen-phosphazene~~ derivative to be used is not particularly limited in view of the molecular structure thereof, and may be any one suitably selected in accordance with the object of the invention. However, preferred are those having a halogen-containing substituent. The halogen element is preferably fluorine, chlorine or bromine, and more preferably fluorine.

Please replace the paragraph beginning on page 22, line 10, with the following rewritten paragraph:

The advantage of the ~~phosphagen-phosphazene~~ derivative having a halogen-containing substituent in its molecular structure is that the halogen has released from the ~~phosphagen-phosphazene~~ derivative more effectively expresses the self-extinguishability and the flame retardancy of the non-aqueous electrolyte even when the ~~phosphagen-phosphazene~~ derivative content of the electrolyte is small. Compounds having a halogen-containing substituent will be often problematic in view of halogen radical generation. However, the ~~phosphagen-phosphazene~~ derivative to be used in the cell of the first to fourth aspects of the invention is selected so that the phosphorus element in the molecular structure of the compound can trap the released halogen radical to thereby form a stable phosphorus halide. For this reason, the ~~phosphagen-phosphazene~~ derivative to be used in the invention is free from the problem.

Please replace the paragraph beginning on page 22, penultimate line, with the following rewritten paragraph:

In the cell of the first to fourth aspects of the invention, the halogen content of the ~~phosphagen-phosphazene~~ derivative preferably falls between 2 and 80 % by weight, more preferably between 2 and 60 % by weight, even more preferably between 2 and 50 % by weight. If the halogen content is smaller than 2 % by weight, the halogen introduction in the compound will be ineffective; but if larger than 80 % by weight, the viscosity of the compound will increase, and when the compound having such a high viscosity is added to the non-aqueous electrolyte, the electroconductivity of the electrolyte will often be lowered.

Please replace the paragraph beginning on page 23, line 9, with the following rewritten paragraph:

In the cell of the first to fourth aspects of the invention, the ~~phosphagen-phosphazene~~ derivative is preferably a linear ~~phosphagen-phosphazene~~ derivative of the following general formula (1) or a cyclic ~~phosphagen-phosphazene~~ derivative of the following general formula (2):



Please replace the paragraph beginning on page 28, line 12, with the following rewritten paragraph:

In formulae (1) to (3), R^1 to R^9 , Y^1 to Y^3 , Y^5 to Y^9 , and Z are suitably selected, thereby favorably controlling the viscosity and the solubility of the non-aqueous electrolyte to be used in the cell of the invention. The potential window in the non-aqueous electrolyte secondary cell of the invention can thus be favorably controlled within a desired range. For example, a ~~phosphagen-phosphazene~~ derivative of formula (2) in which R^4 is a propoxy group has a viscosity at 25°C of 60 mPa·s (cP), and it is a good solvent for the non-aqueous electrolyte. The solubility of lithium salts in the ~~phosphagen-phosphazene~~ derivative of this type is such that up to about 0.5 mols of a lithium salt is soluble in one kg of the compound. Accordingly, the ~~phosphagen-phosphazene~~ derivative exhibits good lithium ion conductivity, when compared to any other ordinary organic solvent-type electrolyte.

Please replace the paragraph beginning on page 29, line 2, with the following rewritten paragraph:

In the cell of the fourth aspect of the invention, the ~~phosphagen-phosphazene~~ derivative must have a low viscosity and a high dielectric constant. Therefore, those of the following general formula (4) are preferred for the ~~phosphagen-phosphazene~~ derivative.

Please replace the paragraph beginning on page 29, line 21 (last paragraph on page 29), with the following rewritten paragraph:

Preferably, all these groups R^{11} , R^{12} , R^{13} , R^{14} and R^{15} are methoxy groups or ethoxy groups, as the ~~phosphagen-phosphazene~~ derivatives of the type have a low viscosity and a high dielectric constant. More preferably, R^{11} and R^{15} each are an electron-attracting group, and R^{12} , R^{13} and R^{14} each are an electron-donating group.

Please replace the paragraph beginning on page 30, line 4, with the following rewritten paragraph:

In the cell of the first to fourth aspects of the invention, one or more different types of ~~phosphagen-phosphazene~~ derivatives such as those mentioned hereinabove may be used either singly or combined.

Please replace the paragraph beginning on page 30, line 20, with the following rewritten paragraph:

In the cell of the first and third aspects of the invention, the aprotic organic solvent is not particularly limited; and in the cell of the second aspect, the solvent also is not particularly limited so long as its potential window is wider than that of the ~~phosphagen phosphazene~~ derivative existing in the non-aqueous electrolyte. For reducing the viscosity of the electrolyte in the cell of the invention, preferred for the organic solvent are ether compounds and ester compounds, including, for example, 1,2-dimethoxyethane, tetrahydrofuran, dimethyl carbonate, diethyl carbonate, diphenyl carbonate, ethylene

carbonate, propylene carbonate, γ -butyrolactone, γ -valerolactone, methylethyl carbonate, and ethylmethyl carbonate.

Please replace the paragraph beginning on page 32, line 18, with the following rewritten paragraph:

In the cell of the second and third aspects of the invention, it is desirable that the non-aqueous electrolyte contains a ~~phosphagen~~phosphazene derivative, LiPF_6 and ethylene carbonate in view of the self-extinguishability and the flame retardancy of the electrolyte.

Please replace the paragraph beginning on page 32, line 24, with the following rewritten paragraph:

In the cell of the first aspect, the non-aqueous electrolyte has good ignition retardancy even if the amount of the ~~phosphagen~~phosphazene derivative therein is small, despite the above description in this respect. Specifically, if the ~~phosphagen~~phosphazene derivative content of the electrolyte in the cell is larger than 2.5 % by volume, the electrolyte is effective for preventing the cell from exploding and catching fire.

Please replace the paragraph beginning on page 33, line 6, with the following rewritten paragraph:

In the cell of the second and third aspects, the non-aqueous electrolyte has good self-extinguishability and good flame retardancy even though the amount of the ~~phosphagen~~phosphazene derivative therein is small, despite the above description in this respect. Specifically, if the ~~phosphagen~~phosphazene derivative content of the electrolyte in the cell falls between 1.5 and 2.5 % by volume, the electrolyte exhibits good self-extinguishability; and if larger than 2.5 % by volume, the electrolyte ~~hibits~~exhibits flame retardancy.

Please replace the paragraph beginning on page 37, line 17, with the following rewritten paragraph:

The thus-obtained cylindrical electrode was housed in a UM-3 size cell body, and a non-aqueous electrode that had been prepared by dissolving a lithium salt LiPF_6 in 1 ml of a ~~phosphagen-phosphazene~~ derivative (this is a linear EO-type ~~phosphagen-phosphazene~~ derivative of formula (1) in which X is the organic group (A) of formula (3), Y^1 to Y^3 and Y^5 to Y^6 are all single bonds, R^1 to R^3 and R^5 to R^6 are all ethoxy groups, and Z is oxygen, having a flash point of 155°C and a viscosity at 25°C of $5.8 \text{ mPa}\cdot\text{s}$ (cP)) to have a lithium salt concentration of 0.5 mols/kg was introduced thereinto, and sealed up. In that manner, 10 UM-3 size lithium cells were fabricated.

Please replace the paragraph beginning on page 39, line 17, with the following rewritten paragraph:

A non-aqueous electrolyte secondary cell was fabricated and tested in the same manner as in Example 1, except that used was a linear MO-type ~~phosphagen-phosphazene~~ derivative of formula (1) (in which X is the organic group (A) of formula (3), Y^1 to Y^3 and Y^5 to Y^6 are all single bonds, R^1 to R^3 and R^5 to R^6 are all methoxy groups, and Z is oxygen), having a flash point of 150°C and a viscosity at 25°C of $4.8 \text{ mPa}\cdot\text{s}$ (cP) in place of the linear EO-type ~~phosphagen-phosphazene~~ derivative of formula (1) (in which X is the organic group (A) of formula (3), Y^1 to Y^3 and Y^5 to Y^6 are all single bonds, R^1 to R^3 and R^5 to R^6 are all ethoxy groups, and Z is oxygen), in preparing the electrode structure. The test data obtained, and the viscosity ($\text{mPa}\cdot\text{s}$ (cP)) and the flash point ($^\circ\text{C}$) of the non-aqueous electrolyte used are shown in Table 1.

Please replace the paragraph beginning on page 41, line 2, with the following rewritten paragraph:

A non-aqueous electrolyte secondary cell was fabricated and tested in the same manner as in Example 1, except that used was a mixture of ethylene carbonate and diethyl carbonate (in a ratio ethylene carbonate/diethyl carbonate of 1/1 by volume) having a flash point of 39°C (1 ml), in place of the linear EO-type ~~phosphagen-phosphazene~~ derivative of formula (1) (in which X is the organic group (A) of formula (3), Y¹ to Y³ and Y⁵ to Y⁶ are all single bonds, R¹ to R³ and R⁵ to R⁶ are all ethoxy groups, and Z is oxygen, and which has a flash point of 155°C and a viscosity at 25°C of 5.8 mPa·s (cP)), in preparing the electrode structure. The test data obtained, and the viscosity (mPa·s (cP)) and the flash point (°C) of the non-aqueous electrolyte used are shown in Table 1.

Please replace the paragraph beginning on page 43, line 13, with the following rewritten paragraph:

The potential window of the aprotic organic solvent used in the following Examples is wider than that of the ~~phosphagen-phosphazene~~ derivative therein.

Please replace the paragraph beginning on page 43, line 18, with the following rewritten paragraph:

20 ml of a ~~phosphagen-phosphazene~~ derivative (this is a linear EO-type ~~phosphagen-phosphazene~~ derivative of formula (1) in which X is the organic group (A) of formula (3), Y¹ to Y³ and Y⁵ to Y⁶ are all single bonds, R¹ to R³ and R⁵ to R⁶ are all ethoxy groups, and Z is oxygen, having viscosity at 25°C of 5.8 mPa·s (5.8 cP) and having a flash point to 155°C) was added to 80 ml of γ -butyrolactone (aprotic organic solvent having a viscosity at 25°C of 1.7 mPa·s (1.7 cP)), the ratio of the ~~phosphagen-phosphazene~~ derivative being 20 % by volume. A lithium salt, LiBF₄ (concentration: 0.5 mols/kg) was added to this to prepare a non-aqueous electrolyte.

Please replace the paragraph beginning on page 46, line 3, with the following rewritten paragraph:

Using the cyclic voltammeter mentioned above, the lowermost value and the uppermost value of the ~~phosphagen~~-phosphazene derivative used herein were measured under the condition mentioned above. The data are given in Table 2.

Please replace the paragraph beginning on page 47, line 22, with the following rewritten paragraph:

A non-aqueous electrolyte was prepared and tested for the self-extinguishability and the flame retardancy in the same manner as in the "preparation of non-aqueous electrolyte" in Example 5, except that the amount of γ -butyrolactone used was 20 ml and that of the ~~phosphagen~~-phosphazene derivative was 80 ml (80 % by volume). Also in the same manner as in Example 5, a non-aqueous electrolyte secondary cell was fabricated and tested for the potential window, the cell life stability, the electrochemical stability and the low-temperature discharge characteristic. The results are given in Table 2.

Please replace the paragraph beginning on page 48, line 8, with the following rewritten paragraph:

A non-aqueous electrolyte was prepared and tested for the self-extinguishability and the flame retardancy in the same manner as in the "preparation of non-aqueous electrolyte" in Example 6, except that a linear EO-type ~~phosphagen~~-phosphazene derivative of formula (1) (in which X is the organic group (A) of formula (3), Y^1 to Y^3 and Y^5 to Y^6 are all single bonds, R^1 to R^3 and R^5 to R^6 are all ethoxy groups, and Z is oxygen, but in which the hydrogen element in the ethoxy groups are partially substituted with fluorine to such a degree that the fluorine content of the ~~phosphagen~~-phosphazene derivative is 12.4 % by weight) was used. Also in the same manner as in Example 6, a non-aqueous electrolyte secondary cell

was fabricated and tested for the potential window, the cell life stability, the electrochemical stability and the low-temperature discharge characteristic. The results are given in Table 2.

Please replace the paragraph beginning on page 48, line 24, with the following rewritten paragraph:

A non-aqueous electrolyte was prepared and tested for the self-extinguishability and the flame retardancy in the same manner as in the "preparation of non-aqueous electrolyte" in Example 5, except that 97 ml of ethylene carbonate was used in place of 80 ml of γ -butyrolactone, the amount of the ~~phosphagen-phosphazene~~ derivative was 3 ml (3 % by volume), and a lithium salt LiPF_4 was used in place of LiBF_4 . Also in the same manner as in Example 5, a non-aqueous electrolyte secondary cell was fabricated and tested for the potential window, the cell life stability, the electrochemical stability and the low-temperature discharge characteristic. The results are given in Table 2.

Please replace the paragraph beginning on page 49, line 11, with the following rewritten paragraph:

A non-aqueous electrolyte was prepared and tested for the self-extinguishability and the flame retardancy in the same manner as in the "preparation of non-aqueous electrolyte" in Example 5, except that the linear EO-type ~~phosphagen-phosphazene~~ derivative of formula (1) (in which X is the organic group (A) of formula (3), Y^1 to Y^3 and Y^5 to Y^6 are all single bonds, R^1 to R^3 and R^5 to R^6 are all ethoxy groups, and Z is ~~oxygen~~ was oxygen) ~~was not~~ used. Also in the same manner as in Example 5, a non-aqueous electrolyte secondary cell was fabricated and tested for the potential window, the cell life stability, the electrochemical stability and the low-temperature discharge characteristic. The results are given in Table 2.

Please replace the paragraph beginning on page 51, line 11, with the following rewritten paragraph:

10 ml of a ~~phosphagen~~phosphazene derivative (this is a linear EO-type ~~phosphagen~~phosphazene derivative of formula (1) in which X is the organic group (A) of formula (3), Y¹ to Y³ and Y⁵ to Y⁶ are all single bonds, R¹ to R³ and R⁵ to R⁶ are all ethoxy groups, and Z is oxygen, having a flash point of 155°C) was added to 40 ml of γ -butyrolactone (aprotic organic solvent having a viscosity at 25°C of 1.7 mPa·s (1.7 cP)), the ratio of the ~~phosphagen~~phosphazene derivative being 20 % by volume. A lithium salt, LiBF₄ (concentration: 0.5 mols/kg) was added to this to prepare a non-aqueous electrolyte.

Please replace the paragraph beginning on page 51, line 21, with the following rewritten paragraph:

The electroconductivity of the ~~phosphagen~~phosphazene derivative used herein was measured in the lithium salt solution (0.5 mol/liter) according to the method mentioned hereinabove, and it was 7.5 mS/cm.

Please replace the paragraph beginning on page 55, line 10, with the following rewritten paragraph:

A non-aqueous electrolyte was prepared and tested for the self-extinguishability and the flame retardancy in the same manner as in the “preparation of non-aqueous electrolyte” in Example 9, except that γ -butyrolactone was not used and the amount of the ~~phosphagen~~phosphazene derivative used (this is a linear EO-type ~~phosphagen~~phosphazene derivative of formula (1) in which X is the organic group (A) of formula (3), Y¹ to Y³ and Y⁵ to Y⁶ are all single bonds, R¹ to R³ and R⁵ to R⁶ are all ethoxy groups, and Z is oxygen) was 50 ml.

Please replace the paragraph beginning on page 55, line 19, with the following rewritten paragraph:

The electroconductivity of the ~~phosphagen~~-phosphazene derivative used herein was measured in the lithium salt solution (0.5 mol/liter) according to the method mentioned hereinabove, and it was 2.0 mS/cm.

Please replace the paragraph beginning on page 56, line 4, with the following rewritten paragraph:

A non-aqueous electrolyte was prepared and tested for the self-extinguishability and the flame retardancy in the same manner as in the “preparation of non-aqueous electrolyte” in Example 9, except that 10 ml (20 % by volume) of the ~~phosphagen~~-phosphazene derivative was used and combined with an additional ~~phosphagen~~-phosphazene derivative (this is a linear EO-type ~~phosphagen~~-phosphazene derivative of formula (1) in which X is the organic group (A) of formula (3), Y¹ to Y³ and Y⁵ to Y⁶ are all single bonds, R¹ to R³ and R⁵ to R⁶ are all ethoxy groups, and Z is oxygen, but in which the hydrogen element in the ethoxy groups are partially substituted with fluorine to such a degree that the fluorine content of the ~~phosphagen~~-phosphazene derivative is 12.4 % by weight) was used to such that the additional ~~phosphagen~~-phosphazene derivative content was 60 % by volume.

Please replace the paragraph beginning on page 56, line 18, with the following rewritten paragraph:

The electroconductivity of the combined ~~phosphagen~~-phosphazene derivative used herein was measured in the lithium salt solution (0.5 mol/liter) according to the method mentioned hereinabove, and it was 4.5 mS/cm.

Please replace the paragraph beginning on page 57, line 3, with the following rewritten paragraph:

A non-aqueous electrolyte was prepared and tested for the self-extinguishability and the flame retardancy in the same manner as in the "preparation of non-aqueous electrolyte" in Example 9, except that 40 ml of γ -butyrolactone was replaced with 48.5 ml of ethylene carbonate, the amount of ~~phosphagen-phosphazene~~ derivative (this is a linear EO-type ~~phosphagen-phosphazene~~ derivative of formula (1) in which X is the organic group (A) of formula (3), Y^1 to Y^3 and Y^5 to Y^6 are all single bonds, R^1 to R^3 and R^5 to R^6 are all ethoxy groups, and Z is oxygen) was 1.5 ml (3 % by volume), and a lithium salt $LiBF_4$ was used in place of $LiPF_4$.

Please replace the paragraph beginning on page 57, line 13, with the following rewritten paragraph:

The electroconductivity of the ~~phosphagen-phosphazene~~ derivative used herein was measured in the lithium salt solution (0.5 mol/liter) according to the method mentioned hereinabove, and it was 7.5 mS/cm.

Please replace the paragraph beginning on page 57, line 23, with the following rewritten paragraph:

A non-aqueous electrolyte was prepared and tested for the self-extinguishability and the flame retardancy in the same manner as in the "preparation of non-aqueous electrolyte" in Example 9, except that the ~~phosphagen-phosphazene~~ derivative (this is a linear EO-type ~~phosphagen-phosphazene~~ derivative of formula (1) (in which X is the organic group (A) of formula (3), Y^1 to Y^3 and Y^5 to Y^6 are all single bonds, R^1 to R^3 and R^5 to R^6 are all ethoxy groups, and Z is oxygen) was not used and the amount of γ -butyrolactone used was 50 ml. Also in the same manner as in Example 9, a non-aqueous electrolyte secondary cell was

fabricated and tested for the charge-discharge capacity, the internal resistance and the low-temperature discharge characteristic. The results are given in Table 3.

Please replace the paragraph beginning on page 58, line 12, with the following rewritten paragraph:

A non-aqueous electrolyte was prepared and tested for the self-extinguishability and the flame retardancy in the same manner as in the "preparation of non-aqueous electrolyte" in Example 9, except that the ~~phosphagen-phosphazene~~ derivative (this is a linear EO-type ~~phosphagen-phosphazene~~ derivative of formula (1) (in which X is the organic group (A) of formula (3), Y^1 to Y^3 and Y^5 to Y^6 are all single bonds, R^1 to R^3 and R^5 to R^6 are all ethoxy groups, and Z is oxygen) was replaced with a ~~methoxyethoxyethoxyethoxyethoxyphosphagen~~ methoxyethoxyethoxyethoxyethoxyphosphazene derivative (this is a linear MEEEE-type ~~phosphagen-phosphazene~~ derivative of formula (1) in which X is the organic group (A) of formula (3), Y^1 to Y^3 and Y^5 to Y^6 are all single bonds, R^1 to R^3 and R^5 to R^6 are all methoxyethoxyethoxyethoxyethoxy groups, and Z is oxygen).

Please replace the paragraph beginning on page 58, last line, with the following rewritten paragraph:

The electroconductivity of the ~~phosphagen-phosphazene~~ derivative used herein was measured in the lithium salt solution (0.5 mol/liter) according to the method mentioned hereinabove, and it was 0.1 mS/cm.

Please replace Table 3 beginning on page 60 with the following rewritten Table 3:

	Electro-conductivity of <u>Phosphagen Phosphazene</u> Derivative (0.5 mols/liter in lithium salt solution) (mS/cm)	Charge-Discharge Capacity of Cell (mAh/g)		Low-temperature Discharge Characteristic (discharge capacity reduction after 50 cycles)		Self-extinguishability or Flame Retardancy	Internal Resistance (Ω)
		after initial charge-discharge	after 50 charge-discharge cycles	Temperature of discharging - 10°C	Temperature of discharging -20°C		
Example 9	7.5	145	145	at most 40 %	at most 70 %	self-extinguishable	0.19
Example 10	2.0	145	140	at most 40 %	at most 70 %	flame-retardant	0.21
Example 11	4.5	145	142	at most 40 %	at most 70 %	flame-retardant	0.22
Example 12	7.5	145	145	at most 40 %	at most 70 %	flame-retardant	0.19
Co. Ex. 3	-	145	143	at least 50 %	at least 85 %	flame-retardant	0.18
Co. Ex. 4	0.1	-	-	-	-	flame-retardant	0.35

Please replace the paragraph beginning on page 62, line 11, with the following rewritten paragraph:

A lithium salt, LiPF_4 was dissolved in 50 ml of a ~~phosphagen~~-phosphazene derivative (this is a linear EO-type ~~phosphagen~~-phosphazene derivative of formula (2) in which X is the organic group (A) of formula (3), Y^1 to Y^5 are all single bonds, R^1 to R^5 are all ethoxy groups, and Z is oxygen, having a viscosity at 25°C of 5.8 mPa·s (5.8 cP), and a flash point of 155°C) to a lithium salt concentration of 0.5 mols/kg to prepare a non-aqueous electrolyte.

Please replace the paragraph beginning on page 62, line 19, with the following rewritten paragraph:

The dielectric constant at 25°C of the ~~phosphagen~~-phosphazene derivative used herein was measured, using the device mentioned above under the condition also mentioned above, and it was 18.5.

Please replace the paragraph beginning on page 65, line 20, with the following rewritten paragraph:

A non-aqueous electrolyte was prepared and tested for the self-extinguishability and the flame retardancy in the same manner as in the “preparation of non-aqueous electrolyte” in Example 13, except that the ~~phosphagen-phosphazene~~ derivative (this is a linear MO-type ~~phosphagen-phosphazene~~ derivative of formula (2) (in which X is the organic group (A) of formula (3), Y¹ to Y⁵ are all single bonds, R¹ to R⁵ are all methoxy groups, and Z is oxygen) having a viscosity at 25°C of 4.8 mPa·s (cP) and a flash point of 150°C, in place of the linear EO-type ~~phosphagen-phosphazene~~ derivative of formula (2) (in which X is the organic group (A) of formula (3), Y¹ to Y⁵ are all single bonds, R¹ to R⁵ are all ethoxy groups, and Z is oxygen).

Please replace the paragraph beginning on page 66, line 6, with the following rewritten paragraph:

The dielectric constant at 25°C of the ~~phosphagen-phosphazene~~ derivative used herein was measured, using the device mentioned above under the condition also mentioned above, and it was 18.0.

Please replace the paragraph beginning on page 66, line 15, with the following rewritten paragraph:

A non-aqueous electrolyte was prepared and tested for the self-extinguishability and the flame retardancy in the same manner as in the “preparation of non-aqueous electrolyte” in Example 13, except that used was a linear EO-type ~~phosphagen-phosphazene~~ derivative of formula (2) (in which X is the organic group (A) of formula (3), Y¹ to Y⁵ are all single bonds, R¹ to R⁵ are all methoxy groups, and Z is oxygen, but in which the hydrogen element in the ~~ethoxy-methoxy~~ groups to such a degree that the fluorine content of the ~~phosphagen~~

phosphazene derivative is 12.4 % by weight), having viscosity at 25°C of 11.4 mPa·s (11.4 cP) and a flash point of 257°C.

Please replace the paragraph beginning on page 67, line 1, with the following rewritten paragraph:

The dielectric constant at 25°C of the ~~phosphagen~~-phosphazene derivative used herein was measured, using the device mentioned above under the condition also mentioned above, and it was 39.

Please replace the paragraph beginning on page 67, line 10, with the following rewritten paragraph:

A non-aqueous electrolyte was prepared and tested for the self-extinguishability and the flame retardancy in the same manner as in the “preparation of non-aqueous electrolyte” in Example 13, except that used was a cyclic MEE-type ~~phosphagen~~-phosphazene derivative having the structural formula shown below in which R's are all methoxyethoxyethoxy groups, and having viscosity at 25°C of 59.6 mPa·s (59.6 cP), in place of the linear EO-type ~~phosphagen~~-phosphazene derivative of formula (2) (in which X is the organic group (A) of formula (3), Y¹ to Y⁵ are all single bonds, R¹ to R⁵ are all ethoxy groups, and Z is oxygen).

Please replace the paragraph beginning on page 67, line 22, with the following rewritten paragraph:

Also in the same manner as in Example 13, a non-aqueous electrolyte secondary cell was fabricated and tested for the charge-discharge capacity to indicate the long-term stability of the cell, and for the low-temperature discharge characteristic. However, since the viscosity of the ~~phosphagen~~-phosphazene derivative was too high, the electroconductivity thereof was low, and in addition, the charge-discharge capacity of the cell was not good. The results are given in Table 4 (Comparative Example 5).

Please replace the paragraph beginning on page 68, line 6, with the following rewritten paragraph:

The dielectric constant at 25°C of the ~~phosphagen~~-phosphazene derivative used in this Comparative Example was measured, using the device mentioned above under the condition also mentioned above, and it was 10.0.

Please replace Table 4 beginning on page 69 with the following rewritten Table 4:

	Dielectric Constant of Phosphagen <u>Phosphazene</u> Derivative	Charge-Discharge Capacity of Cell (mAh/g)		Low-temperature Discharge Characteristic (discharge capacity reduction after 50 cycles)		Self-extinguishability or Flame Retardancy
		after initial charge-discharge	after 20 charge-discharge cycles	Temperature of discharging - 10°C	Temperature of discharging -20°C	
Example 13	18.5	145	143	at most 40 %	at most 70 %	flame-retardant
Example 14	18.0	145	143	at most 40 %	at most 70 %	flame-retardant
Example 15	39.0	145	140	at most 40 %	at most 70 %	flame-retardant
Co. Ex. 5	10.0	93	55	at most 40 %	at most 70 %	flame-retardant
Co. Ex. 6	-	-145	140	at most 40 %	at most 70 %	self-extinguishable

Please replace the Abstract with the attached amended/substitute Abstract.